

Revised Water Quality Criteria for Aquatic Life and Human Health

Report to
Commissioner's
December 9, 2009



Background

- ❑ The TAC has deliberated scientific issues regarding water quality criteria for :
 - ✓ Human Health Criteria
 - ✓ Aquatic Life Criteria
- ❑ The TAC established a Toxic Criteria Subcommittee to evaluate recent data and methodologies for establishing water quality criteria with the following objectives:
 - ✓ *To review the basis for existing DRBC water quality criteria and develop recommendations regarding revisions as needed to reflect the current science and risk assessment procedures in Zones 2 through 5.*
 - ✓ *To develop uniform criteria in shared waters of Zones 1 through 6 that harmonize DRBC criteria with basin states.*

Aquatic Life Criteria Revisions

- ❑ Reviewed current EPA recommended national criteria and standards adopted by basin states
- ❑ Changes reflect new scientific information and harmonize DRBC criteria with basin states
- ❑ Proposed criteria that differ from current DRBC stream quality objectives:
 - ❑ 17 Freshwater acute criteria
 - ❑ 13 Freshwater chronic criteria
 - ❑ 16 Marine acute criteria
 - ❑ 7 Marine chronic criteria

Human Health Criteria Revisions

- ❑ Proposed human health criteria were developed in accordance with the Methodology for Ambient Water Quality Criteria for the Protection of Human Health (2000)
 - ❑ 17.5 g/day fish intake in all Zones
 - ❑ 70 kg body weight
 - ❑ 2L drinking water
 - ❑ BCF used instead of BAF
- ❑ Some criteria were modified based on methods adopted by one or more basin state
 - 1) using relative potency factors (PAHs)
 - 2) following NJDEP Group C carcinogens policy
 - 3) including relative source contribution (RSC) when RSC are included in finalized EPA criteria or standards adopted by basin states
 - 4) using updated IRIS data not yet incorporated in national criteria

Human Health Criteria Revisions

❑ Proposed criteria revise all current DRBC human health stream quality objectives (~170 criteria), **except PCBs**, including criteria for

❑ Carcinogens

- ✓ consumption of organism only
- ✓ consumption of water and organisms

❑ Systemic Toxicants

- ✓ consumption of organism only
- ✓ consumption of water and organisms

Action of the TAC

□ TAC voted on six motions :

Separate motions for aquatic life and human health criteria regarding the revision of existing toxics criteria in Zones 2 through 5.

Separate motions for aquatic life and human health criteria regarding proposed uniform toxics criteria for Zones 1 and 6 upon authorization to expand toxic criteria into Zones 1 and 6 by the Commissioners.

A motion regarding freshwater aquatic life criteria for total ammonia in Zones 1 through 5

A motion regarding marine aquatic life criteria for ammonia in Zones 5 & 6

Motion 1 regarding the Revised Water Quality Criteria for the Protection of Aquatic Life in Zones 2 - 5

The Toxics Criteria Subcommittee of the Toxics Advisory Committee (TAC) has developed revised numerical aquatic life water quality criteria applicable to Zones 2 - 5 of the Delaware Estuary. The approach used to develop the revised criteria is consistent with current EPA recommended national criteria and standards adopted by basin states. The TAC recommends that the Commission proceed with the process of public notice and comment for the adoption of the revised criteria to replace the current criteria.

Approved by vote : 6 – Yea, 3 – Nay, 0 -Abstain

Motion 2 regarding the Revised Water Quality Criteria for the Protection of Human Health in Zones 2 - 5

The Toxics Criteria Subcommittee of the Toxics Advisory Committee (TAC) has developed revised numerical human health water quality criteria applicable to Zones 2 - 5 of the Delaware Estuary. The approach used to develop the revised criteria is consistent with U.S. EPA guidance issued in October 2000 (EPA-882-B-00-004). The TAC recommends that the Commission proceed with the process of public notice and comment for the adoption of the revised criteria to replace the current criteria.

Approved by vote: 7 – Yea, 2 – Nay, 0 - Abstain

Motion 3 regarding Proposed Water Quality Criteria for the Protection of Aquatic Life in Zones 1 and 6

The Toxics Criteria Subcommittee of the Toxics Advisory Committee (TAC) has developed uniform numerical aquatic life water quality criteria that are also applicable to Zone 1 in the non-tidal Delaware River and Zone 6 in the Delaware Bay. The approach used to develop the revised criteria is consistent with current EPA recommended national criteria and standards adopted by basin states. The TAC recommends that the Commission expand toxic criteria for aquatic life to Zones 1 and 6, and proceed with the process of public notice and comment for the adoption of the uniform criteria.

Approved by vote: 6 – Yea, 3 – Nay, 0 - Abstain

Motion 4 regarding the Proposed Water Quality Criteria for the Protection of Human Health in Zones 1 and 6

The Toxics Criteria Subcommittee of the Toxics Advisory Committee (TAC) has developed uniform numerical human health water quality criteria applicable to Zone 1 in the non-tidal Delaware River and Zone 6 in the Delaware Bay. The approach used to develop the uniform criteria is consistent with U.S. EPA guidance issued in October 2000 (EPA-882-B-00-004). The TAC recommends that the Commission expand toxic criteria for human health to Zones 1 and 6, and proceed with the process of public notice and comment for the adoption of the uniform criteria.

Approved by vote: 7 – Yea, 2 – Nay, 0 - Abstain

Motion 5 regarding the Proposed Water Quality Criteria for Ammonia in Zones 1 through 5

The Toxics Criteria Subcommittee of the Toxics Advisory Committee (TAC) has developed acute and chronic aquatic life water quality criteria for **total ammonia** that are applicable to Zones 1 – 5 of the Delaware River. The approach used for the revised criteria is consistent with current EPA recommended national freshwater criteria. The TAC recommends that the Commission proceed with the process of public notice and comment for the adoption of acute and chronic total ammonia criteria.

Not approved – 6 votes required

Vote: 5 – Yea, 3 – Nay, 1 - Abstain

Motion 6 regarding the Proposed Water Quality Criteria for Ammonia in Zones 5 & 6

The Toxics Criteria Subcommittee of the Toxics Advisory Committee (TAC) has developed acute and chronic aquatic life water quality criteria for **unionized ammonia** that are applicable to Zones 5 and 6 of the Delaware River. The approach used for the revised criteria is consistent with current EPA recommended national marine criteria. The TAC recommends that the Commission proceed with the process of public notice and comment for the adoption of acute and chronic unionized ammonia criteria.

Approved by vote: 6 – Yea, 2 – Nay, 1 - Abstain

TAC Vote on Criteria Motions from TCS (Pass = 6 or 51% of responders)

	1-AL Zones 2-5	2-HH Zones 2-5	3-AL Zones 1+6	4-HH Zone 1+6	5- total ammonia Zones 1-5	6- unionized ammonia Zones 5+6
DE	Y	Y	Y	Y	Y	Y
NJ	Y	Y	Y	Y	N	Y
NY	NR	NR	NR	NR	NR	NR
PA	N	N	N	N	A	A
EPA	Y	Y	Y	Y	Y	Y
Academic	Y	Y	Y	Y	Y	Y
Watershed	NR	NR	NR	NR	NR	NR
Watershed	Y	Y	Y	Y	Y	Y
FWS	N	Y	N	Y	N	N
Industry	N	N	N	N	N	N
Municipal	Y	Y	Y	Y	Y	Y
Public Health	NR	NR	NR	NR	NR	NR
Agriculture	NR	NR	NR	NR	NR	NR
Total YEA	6	7	6	7	5	6

Comments

❑ Aquatic Life Criteria

❑ PA

- ✓ Lead - The criteria should be consistent with national > recommendations and based on hardness. It is not clear why it is > proposed to deviate from this. >
- ✓ Cr+3, dissolved - The translator used for the Delaware (0.27) > is significantly lower than the national translator (0.86) and > should be explained. >
- ✓ An extension of the criteria developed for Zones 2-5 to Zone 1 should be based on in-stream data obtained in Zone 1.

❑ FWS - Aquatic life criteria proposals have not addressed protective wildlife numbers directly for mercury, total PCBs, and total DDTx. Regardless of other merits of these revisions, I cannot support these "aquatic life" revisions without due consideration of wildlife, which will control all three criteria.

Comments Aquatic Life

- ❑ Del - one question for you regarding the aquatic life criteria for metals. Is language being proposed that says something like: *
- ❑ For assessment purposes, freshwater aquatic life criteria will be applied when the salinity at the time of sampling is less than 5 and the marine aquatic life criteria will be applied when the salinity at the time of sampling is greater than 5. For hardness dependent freshwater criteria, the hardness at the time of sampling will be used to calculate the criteria value against which the measured concentration of the metal will be compared. *
- ❑ For purposes of developing water quality based effluent limits for metals, the median hardness values listed in section xx.xxx shall be used (I believe DRBC already has language like this). Of course, the above issue has more to do with how the criteria are applied than the criteria themselves. Nevertheless, language along this line is important for scientific and policy reasons.

Comments

☐ Ammonia Criteria

- ☐ PA- It is reported that EPA will be revising the > freshwater criteria in 2010. Why adopt standards now that might be > dated in the near future? >
- ☐ NJ - Should wait for the ammonia criteria in zone 1 where mussels exist until EPA publishes their new recommendation. As for the other zones we should go ahead with the process.
- ☐ FWS - Ammonia ALC are currently being revisited by EPA nationally. Mussels are much more sensitive than fish. Therefore, the existing most restrictive criterion for Freshwater is PA and for Marine is New Jersey. These should be retained to protect shellfish and adopted by the DRBC. Note EPA will be addressing this issue in a Federal Register Notice in late 2009 according to the attached abstract from this year's SETAC Meeting. DRBC can revisit the ammonia revision after EPA issues new guidance and/or completes an Endangered Species Act Section 7 consultation with the Fish and Wildlife Service and/or the National Marine Fisheries Service. Regardless, DRBC should take advantage of EPA's draft criterion information on mussels when it is published in the development of a new criterion since mussels are an important aquatic life existing use within the Delaware River basin that need to be fully protected.

Comments

☐ Human Health Criteria

☐ PCB - PA is not ready to support a criteria of 16 pg/l
> deviating from the national 64 pg/l.

☐ Note: Industry representative received email on motions late causing insufficient time to review motions. Industry representatives participated in Toxics Criteria Subcommittee recommendations.

Comments Human health

- ❑ Industry - As the industrial representative to TAC, I have several concerns about the proposals that are shared by other industry representatives I contacted. As you know from the comments recently submitted by the Delaware Estuary TMDL Coalition in response to the proposed revision to the PCB water quality standards, many of DRBC's human health criteria derivation assumptions, which are now proposed for generic use, were questioned. Some of the concerns identified relate to: *
- ❑ the selection of a risk level of 10^{-6} *
- ❑ the assumed body weight of 70 kg (EPA's new guidance recommends 80 kg) *
- ❑ the derivation of the fish consumption rate of 17.5 g/day *
- ❑ the failure to consider contaminant loss during cooking *
- ❑ the compounding effect of multiple layers of conservatism
- ❑ The issue of the appropriate risk level was specifically identified in DRBC's August PCB proposal as a subject about which comments were requested.
- ❑ Until DRBC responds to the comments, additional revisions to the water quality criteria should not be advanced. Likewise, it would appear to circumvent the process for TAC to again recommend adoption of a new PCB standard (referenced in the table as a proposal from 2009) without full consideration by DRBC of the comments submitted in response to the August proposal.
- ❑ In addition, it would be prudent to consider the conclusions reached by TAC, as set forth in these proposals, in light of the September, 2009 publication of EPA's Methodology for Deriving Ambient Water Quality Criteria of the Protection of Human Health (2000) Technical Support Document Volume 3: Development of Site specific Bioaccumulation Factors (EPA-822-R-09-008), which includes recommendations and approaches that may be relevant to TAC's deliberations.
- ❑ Finally, has there been any assessment of whether any of the proposed criteria can be achieved, a special concern with respect to legacy pollutants such as mercury.